

## **REMARKS**

Claims 1 and 4-44 are pending in the application. Claims 1 and 40 are currently amended. Claims 2, 3, and 45 have been cancelled. Applicants respectfully request for allowance of all the pending claims based on following discussions.

### **Rejections under 35 USC 102**

Claims 1, 2, 4, 6-9, 11-13, 15-18, 24, 27, 28, 32-36, and 40-44 are rejected under 35 USC 102(b) as being anticipated by U.S. Patent No. 5,827,415 to Gur et al. (hereinafter referred to as "Gur").

Independent claim 1 is directed to a contaminant molecule sensor configured for use in a vacuum environment, the sensor comprising: an electrochemical cell comprising a measurement electrode comprising a catalyst selected for its ability to catalyze the dissociation of a contaminant molecule into its ionic species; a reference electrode comprising a catalyst selected for its ability to catalyze the dissociation of a reference molecule into its ionic species; and a solid-state ionic species conductor bridging the measurement electrode and the reference electrode, the conductor being selected to conduct an ionic species common to the dissociated contaminant and reference molecules; and means for initiating catalysis of the dissociation of the reference and contaminant molecules. As amended, claim 1 now includes additional limitation "wherein the means for initiating comprises means for controlling and monitoring the temperature of the cell" and "means for separating a reference environment space from a monitored environment space, wherein the means for controlling and monitoring the temperature of the cell includes a heating device contained within the reference

environment space.” It is noted that the additional limitations were originally recited in claim 2 and 3, which are now cancelled.

Gur does not teach the limitation *“a heating device contained within the reference environment space,”* as described in the amended claim 1. The limitation was originally recited in claim 3. It is noted that Gur is not relied upon by the Examiner in rejecting the original claim 3.

Moreover, Gur teaches a heating element 42 surrounding a bimetal reference environment (Ni/NiO), instead of being contained in it. *See, FIG. 4.* The reference environment in Gur is a bimetal structure that generates a self-contained oxygen reference environment separated from the ambient environment. *See, col. 5, lines 64-67.* The bimetal structure is contained in the oxygen sensor. *See, FIG. 3.* The oxygen sensor is surrounded by a cup-shaped holder 41, in which the heating element 42 is embedded. *See, col. 7, lines 1-11.* Thus, the reference environment as embodied by the bimetal structure is contained in or surrounded by the heating element 42, instead of the other way around. As such, claim 1 as amended is not anticipated by Gur under 35 USC 102(b).

Independent claim 40, as amended, is directed to a method comprising a limitation *“using a heating device contained within the reference environment separated from the monitored environment.”* For the reasons as discussed above, Applicants respectfully submit that claim 40 as amended is not anticipated by Gur under 35 USC 102(b), either.

Accordingly, claims 4, 6-9, 11-13, 15-18, 24, 27, 28, 32-36, and 41-44 that depend from independent claims 1 and 40 and include all the limitations recited therein are not anticipated by Gur, either. It is noted that claim 2 has been cancelled.

Claims 1-7 are rejected under 35 USC 102(b) as being anticipated by US Patent No. 3,871,981 to Flais et al. (hereinafter referred to as "Flais").

Independent claim 1, as amended, includes a limitation "*a heating device contained within the reference environment space.*" Examiner equates Flais' circumferential heater 66 to the claimed heating element, and asserts that Flais teaches the circumferential heater 66 being contained in a reference environment. Applicants respectfully disagree.

In Flais, the insulating material 64 surrounding the circumferential heater 66 is no reference environment. It merely separates the circumferential heater 66 from the jacket 60. *See, col. 6, lines 6-9.* Nothing in Flais suggests that the insulating material 64 is capable of releasing oxygen as a reference environment of an oxygen sensor normally would.

Flais does describe a sealed metal-metal oxide reference system 18 that provides a constant oxygen partial pressure for a specific cell temperature. *See, col. 4, lines 64-67.* Indeed, the reference system 18 is more comparable to the claimed reference environment than the insulating material 64. However, the reference system 18 is contained in an oxygen sensor 10 surrounded by the circumferential heater 66. *See,*

*FIGs. 2 and 5.* This is opposite to the claimed invention where the heating element is contained in the reference environment of a sensor.

As such, claim 1 as amended is not anticipated by Flais under 35 USC 102(b). Accordingly, claims 4-7 that depend from claim 1 and include all the limitations recited therein are not anticipated by Flais under section 102, either. It is noted that claims 2 and 3 have been cancelled.

Claims 1, 11, 21, 25, and 26 are rejected under 35 USC 102(b) as being anticipated by US Patent No. 5,650,054 to Shen et al. (hereinafter referred to as "Shen").

Shen does not teach the limitation "*a heating device contained within the reference environment space,*" as described in the amended claim 1. The limitation was originally recited in claim 3. In the office action, Shen is not relied upon in rejecting the original claim 3. Moreover, as one objective of Shen is to provide a low cost room temperature CO gas sensor, it purposefully designs around sensors equipped with heaters connected to external power sources. *See, col. 1, lines 21-28.*

As such, claim 1 as amended is not anticipated by Shen under 35 USC 102(b). Accordingly, claims 11, 21, 25, and 26 that depend from claim 1 and include all the limitations recited therein are not anticipated by Shen under section 102, either.

### **Rejections under 35 USC §103**

Claims 5, 10, 14, 19, 20, 22, 23, 29-31, 37, 38, and 39 are rejected under 35 USC 103 as unpatentable over Gur, Flais, Shen, and further in view of U.S. Patent No.

Application No.: 10/551,147

Amendment dated March 03, 2010 Reply to Final Office Action of December 2, 2009

Attorney Docket No.: M02B166

5,683,570 to Pacey et al., U.S. Patent No. 4,121,988 to Sano et al, U.S. Patent No.

4,882,032 to Tiwari, U.S. Patent No. 6,365,022 to Hitchman et al., U.S. Patent No.

5,331,310 to Stetter et al, and U.S. Patent No. 4,370,206 to Razumney et al.

For the reasons discussed above, independent claim 1, as amended, is patentable over Gur, Flais, or Shen under section 102. Accordingly, claims 5, 10, 14, 19, 20, 22, 23, 29-31, 37, 38, and 39 that depend from independent claim 1 and include all the limitations recited therein are also patentable over the cited prior art references under section 103.

### **CONCLUSION**

Applicants have made an earnest attempt to place this application in an allowable form. In view of the foregoing remarks, it is respectfully submitted that the pending claims are drawn to a novel subject matter, patentably distinguishable over the prior art of record. Examiner is therefore, respectfully requested to reconsider and withdraw the outstanding rejections.

Should Examiner deem that any further clarification is desirable, Examiner is invited to telephone the undersigned at the below listed telephone number.

Applicants do not believe that any additional fee is due, but as a precaution, the Commissioner is hereby authorized to charge any additional fee to deposit account number 50-4244.

Respectfully submitted,

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